

NTRX-300/300L

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.

Anyone,
Quick, Easy

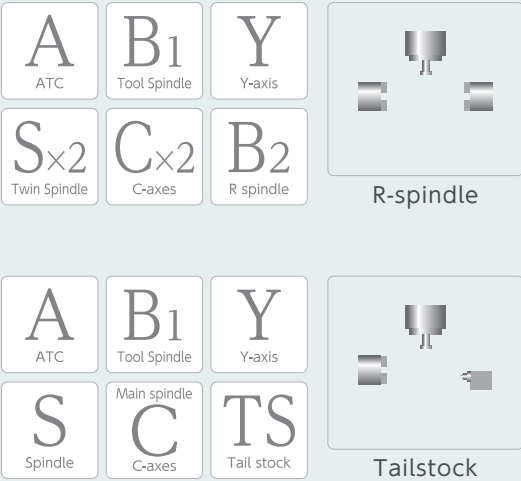
Innovative
Technology

~ Creating new values ~

NTRX-300 NTRX-300L

The latest 8/10-inch machine secures a wide machining area of 250mm square in the center of the spindle. The user-friendly design of the machine reduces the daily workload. A variety of software is excellent for program creation and maintenance is also installed in the machine. This software will support your production well.

- Selectable from R-spindle or Tailstock
- ATC tool spindle motor 22/15kW
Tool spindle speed 8,000min⁻¹ (op. 12,000min⁻¹)
- Number of tools 40 (op. 60, 80, 120)
- X-axis travel below spindle center is 125mm
Y-axis travel is +/-125mm from the spindle center.
- The slides, having a vertical column structure, are mounted on a high rigidity horizontal machine bed with low gravity design.
- Floor space 4,460mm×2,670mm(NTRX-300)
5,440mm×2,670mm(NTRX-300L)
- Large variety of software





Wide machining space,
High machining ability

This machine secures a machining range of 250 mm square(-125 mm in the X-axis direction/±125 mm in the Y-axis direction) from the center of the spindle, enabling high-precision milling on the face over a wide range. Also, the vertical positioning of the slide ensures that the load is evenly applied to the bed, resulting in more stable machining.
In addition, the thermal displacement compensation system "NT Thermo Navigator AI" suppresses thermal changes over time. This makes it possible to perform stable and even higher precision machining.
Nakamura-Tome's multitasking machines not only pursue high machining capacity, but also are designed with "high rigidity" and "high accuracy".



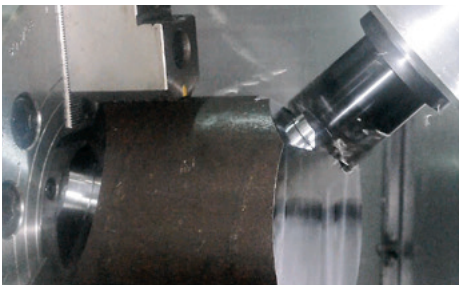
Heavy cutting (Turning)



- Spindle motor 22/18.5kW
- Cutting cross section 5.5mm²/rev
- Cutting speed 120m/min
- Feed 0.55mm/rev
- Depth of cut 10mm
- Material S45C

*The best data with φ80 spindle

Φ50 Milling



- Metal Removal Rate 315cm³/min
- Machining load 97%
- Number of blades 4
- Cutting speed 235m/min
- Milling speed 1,500min⁻¹
- Feed 1,500mm/min
- Axial depth of cut (a_p) 6mm
- Radial depth of cut (a_e) 35mm
- Material S45C

L-spindle

Standard	
Bar capacity	φ65mm
Spindle motor	15/11kW 4,500min ⁻¹
Option	
Bar capacity	φ71mm
Spindle motor	15/11kW 3,500min ⁻¹
Option	
Bar capacity	φ80mm
Spindle motor	22/18.5kW ^{*1} 3,500min ⁻¹
	22/18.5kW ^{*2} 2,500min ⁻¹
Option	
Bar capacity	φ90mm
Spindle motor	22/18.5kW 2,500min ⁻¹

*1 Direct connecting pipe
*2 Joint connection

R-spindle

Standard	
Bar capacity	φ65mm
Spindle motor	15/11kW 4,500min ⁻¹
Option	
Bar capacity	φ71mm
Spindle motor	15/11kW 3,500min ⁻¹
Option	
Bar capacity	φ80mm
Spindle motor	22/18.5kW ^{*1} 3,500min ⁻¹
	22/18.5kW ^{*2} 2,500min ⁻¹

Horizontal bed and vertical column structure

The slides mounted on a horizontal machine bed have a vertical column structure. In the strong and stable vertical column structure, the load is evenly applied.



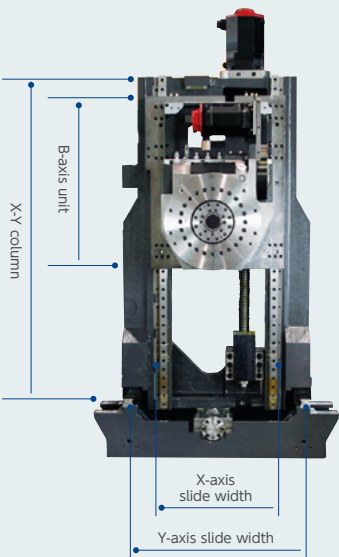
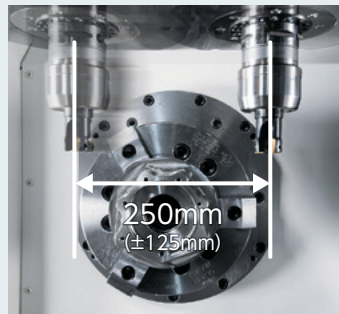
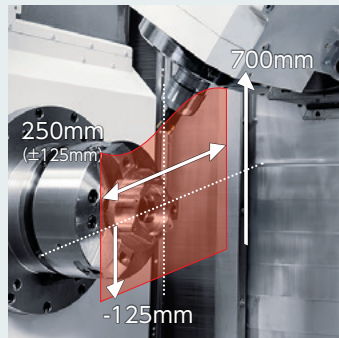
X-axis travel 125mm below spindle center ensures a wider machining range.

Tool Spindle

Standard	
Tool spindle motor	22/15kW 8,000min ⁻¹
Option	
Tool spindle motor	22/15kW 12,000min ⁻¹

High accuracy milling

Thanks to large Y-axis travel and 125mm X-axis travel beyond the spindle center, various machining operations can be performed without rotating the C-axis, such as square milling in the X-Y plane or deep hole drilling in the X-axis direction, ensuring faster cycle time and higher precision.



Highly Rigid Tool Spindle

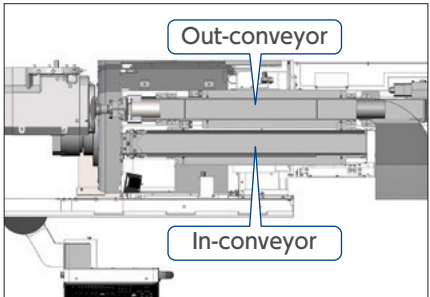
The X-axis slide unit width and depth ensures that the tool spindle unit is mounted on a stable base.

Roller drive

The B1-axis roller drive adopting a preloaded bearing mechanism achieves zero-backlash and high precision positioning and ensures excellent rotation and high transmission accuracy.

High Performance Automation System(op.)

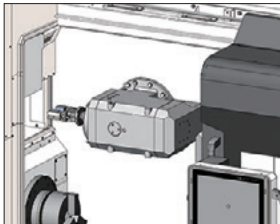
The automation (loading and unloading) is done using grippers stored in the ATC magazine. The gripper will pick up the part from the in conveyor and unload the part on the out conveyor. Both conveyors are located on the right side at the top of the right spindle.



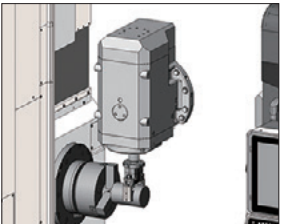
Specification

Workpiece size		Conveyor Capacity	
Diameter	φ50-90mm	Length of Conveyor	NTRX-300 1,335mm
Length	80-150mm		NTRX-300L 1,625mm
Weight	3kg	Maximum Weight	
		In-conveyor	39kg
		Out-conveyor	12kg

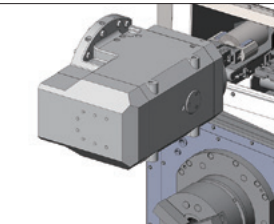
Special jaws are necessary when the work piece is not round.



Call Up Loading gripper from ATC Magazine and load the blank from In-conveyor.

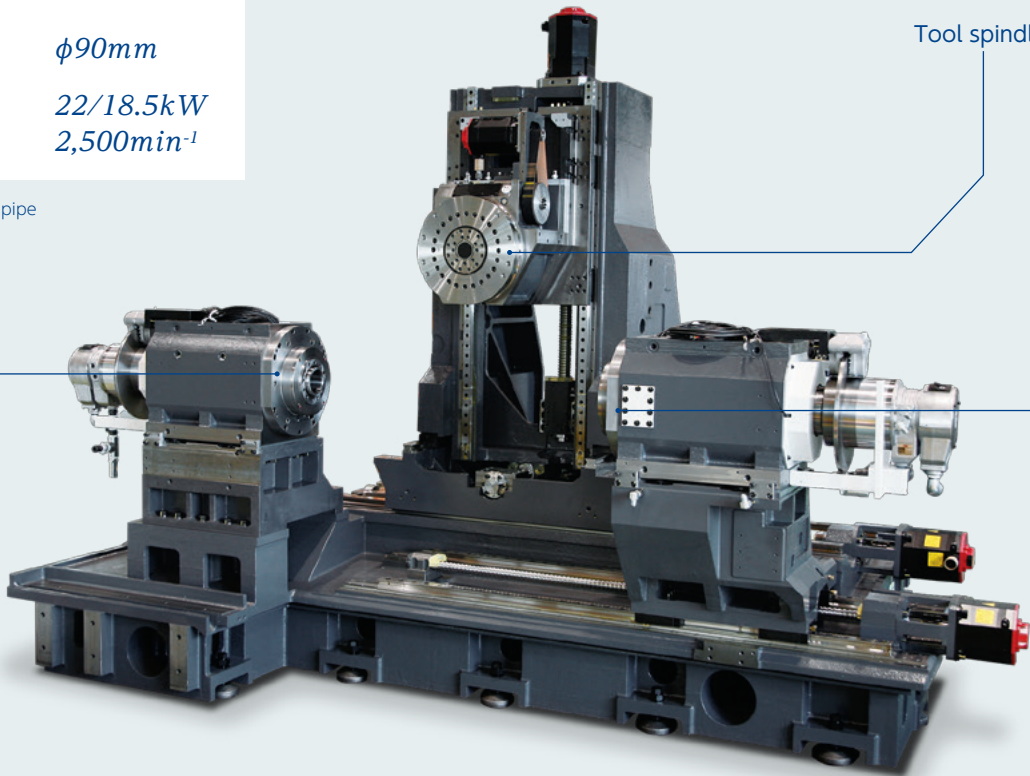


Load the blank by using Loading gripper to the L-spindle.



Unload the finished parts to the Out-conveyor. Side by side : In-conveyor and Out-conveyor.

L-spindle



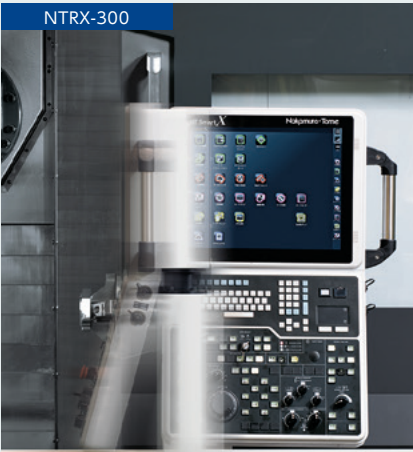
Tool spindle

R-spindle

User friendly
Multitasking machine

Flexible Operation Panel

NTRX-300/300L has a large touch screen control panel with a 90-degree swing design and 500mm movable to the left and right on NTRX300L.



ATC Tool Setup

The ATC magazine is accessible from the machine front, greatly improving tool setup



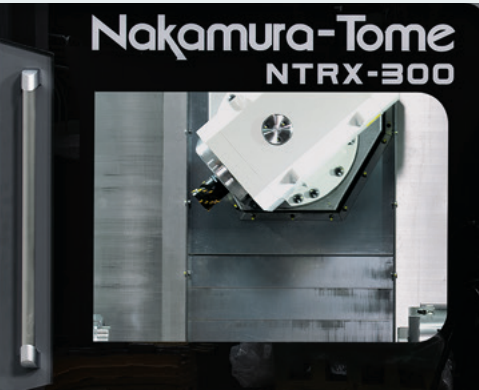
120 tools
Up to 120 tools
available !



ATC Maintenance Navigator
In addition to the information about the ATC status and position of the Tool Changer arm. The step by step ATC recovery guidance screen ensures fast ATC recovery and shorter machine downtime



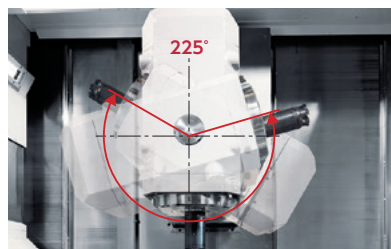
Large window for easy viewing of the machining area



Compact Design

Spindle center is easy to reach, thanks to 450mm distance from the machine front and 1,100mm height from the floor.

NTRX-300



Max. tool diameter
(Without adjacent tool) $\phi 130\text{mm}$
Max. tool length 300mm
B-axis swiveling range $225^{\circ}(-120^{\circ}, +105^{\circ})$



R-spindle / Tailstock
You can select from R-spindle or Tailstock.



Less floor space
with compact design

Floor space (included chiptank)
Standard
 $L4,529\text{mm} \times W2,670\text{mm} \times H2,615\text{mm}$

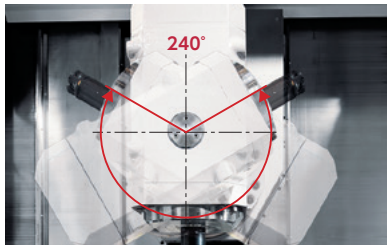
NTRX-300L



NC steady rest(op.)
Type A(diameter 20-165mm) or B (diameter 50-200mm) can be chosen. Pressure range 0.8-3.5MPa. CNC servo-driven steady rest automatic positioning for maximum flexibility.

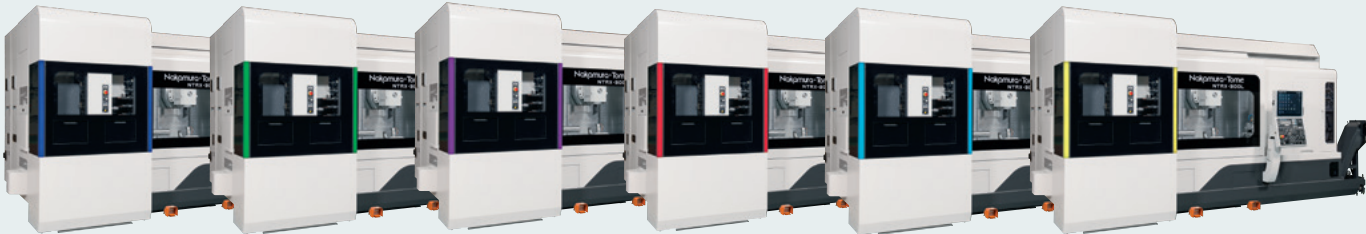
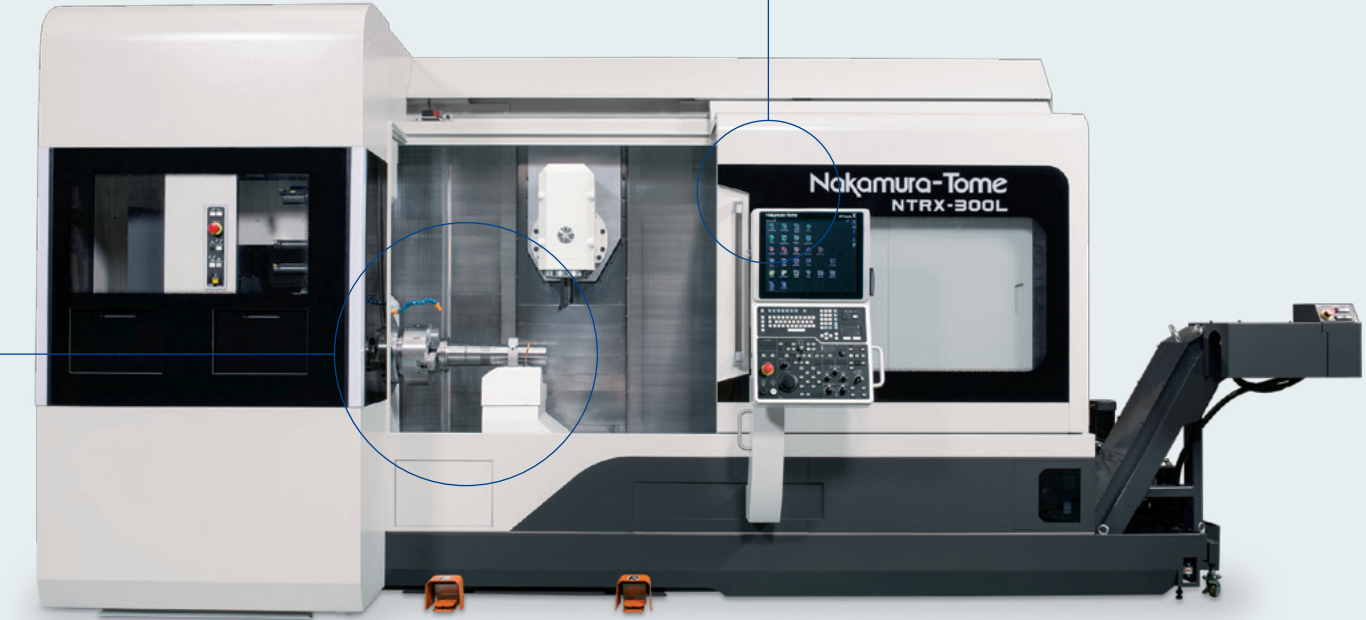
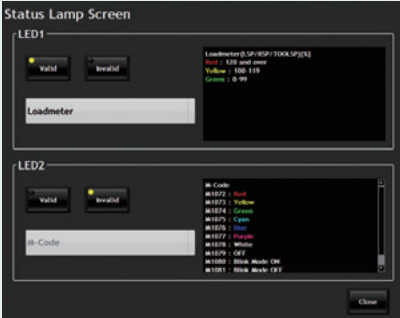


Long Tool ATC(op.)
Long Tool ATC is optionally available. Up to three(3) long tools can be used.(MAX. length 450mm, MAX Diameter 65mm, MAX weight 12kg)



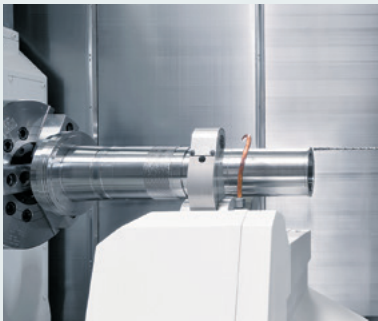
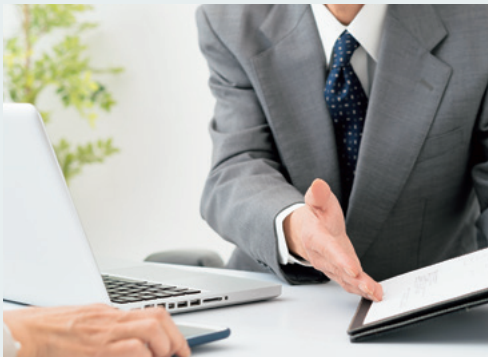
Max. tool diameter
(Without adjacent tool) $\phi 130\text{mm}$
Max. tool length 300mm
B-axis swiveling range $240^{\circ}(\pm 120^{\circ})$

Color Visualization of Machine Condition
Machine condition is clearly visualized with 2 color LED lights on the machine front covers : Signal tower, load-meter, work-counter, ATC condition, ... etc. The displayed information can be set on NT SmartX.



Various Options to Meet our Customer's Needs.
Total Provider for Peripheral Equipment.

Whether it is machine setup, cutting chip management, higher efficiency, or improved productivity, Nakamura-Tome offers top-class peripheral equipment, which boosts the performance of our Multitasking Machines. As a total solution provider using our vast experience, Nakamura-Tome offers complete solutions, including Multitasking Machines complemented with a great variety of peripheral equipment.



NC steady rest(NTRX-300L)



Long Tool ATC(NTRX-300L)

And many others.
For items not listed, please
feel free to contact your
Nakamura-Tome representative.



Fire protection damper



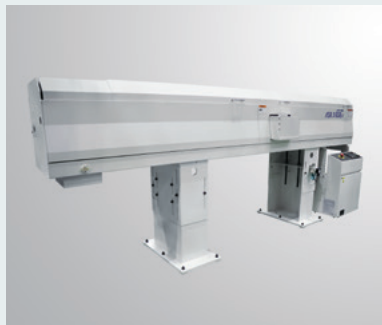
Duct for Oil Mist Collector



Han-Bei (In-process measuring system)



Chip conveyor



Bar feeder



Coolant pump



Tool setter



NT SmartX

Full Operator Support from
Ease of Use to Reliability

Main features of NT SmartX

Standard	
• NT WORK NAVIGATOR	• Drop Converter
• Airbag (Overload detection)	• Cut in check
• NT NURSE	• Program Optimizer
• Status Display Function	• NT Machine Simulation
• Setup Display	• NT Collision Guard
• Trouble Guidance	• NT Thermo Navigator AI
• Productivity Function	• Digital Chuck Interlock
• Warm up Function	• NT Manual Guide i
• Smart Support	• One touch MDI
	• 3D Smart Pro AI

19 inch color LCD touch panel	Original Menu screen
QWERTY keyboard	Voice Guidance
PC memory 8 GB	Multi-Touch Screen
	Touch pad



- Powered by AI as standard equipment
- NT Thermo Navigator AI
- 3D Smart Pro AI



Cut in check



Digital Chuck Interlock

Set the Chuck Open and Close detection position easily.
The chuck open / close position is set up on the NT SmartX screen.
Setup time and machining cycle time are reduced.

One Touch MDI

This function is to register frequently used program blocks or cycles, such as zero return or tool change, and call them again with one touch.

Reduce programming and setup time while eliminating input errors.



NT Smart Sign

Nakamura-Tome IoT software

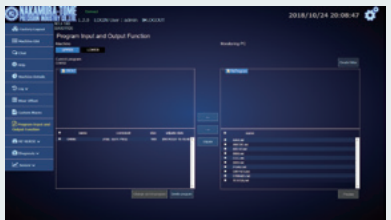
※Please refer to the NT Smart Sign exclusive catalog for details.

■ Monitoring



Real-Time Monitoring of machine running conditions, in addition to visualizing alarm history and past events.

■ Data Input / Output

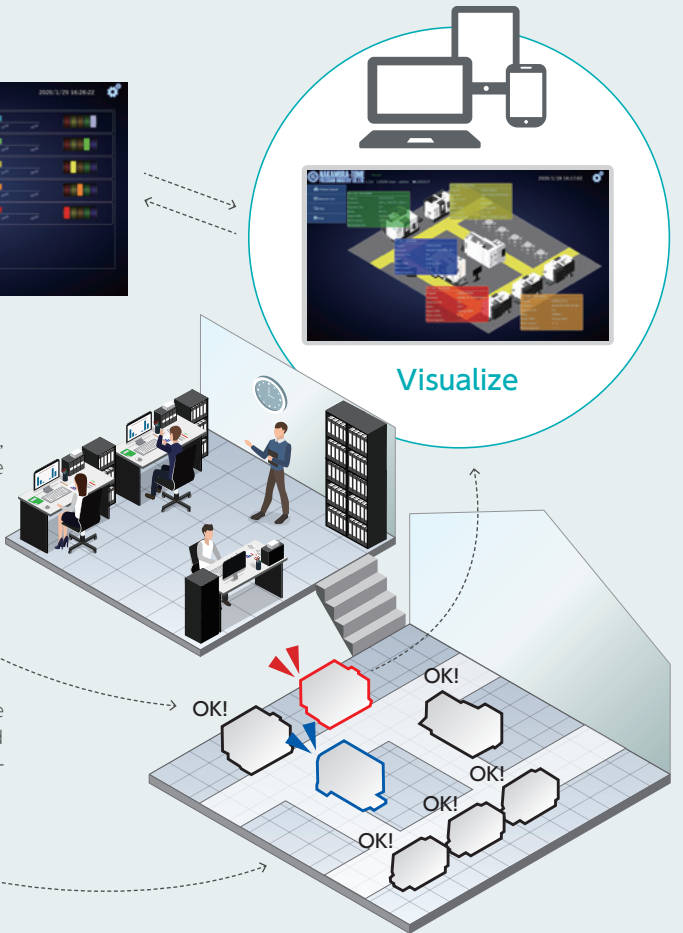


Input and output programs, tool data and other machine data from the monitoring PC.

■ Diagnosis



Diagnose problems with the machine servo drives and spindle drives, using a dedicated program.



NT Thermo Navigator AI

Thermal Growth
Compensation using AI.

Compensation model built using AI machine learning.

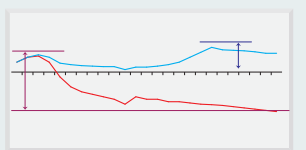
Powered by AI

Time and measured dimension data are input into a dedicated AI Learning software, to build an optimized thermal growth compensation model.



High Precision Thermal Growth Compensation

The compensation value is calculated from acquired data.
The more data is input, the more accurate is the compensation value.



— Pre-correction thermal displacement data
— Thermal displacement data after correction

- ① Time
- ② Measured Dimensions
- ③ Retrieval of Wear Offset Data



Acquired Data analyzed with NT Thermo Navigator AI

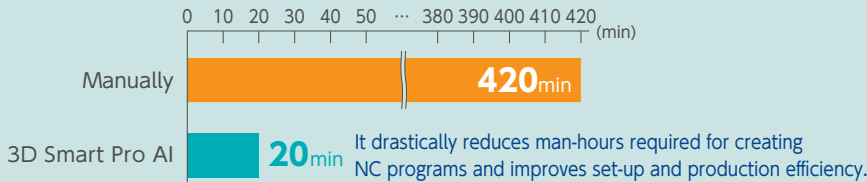
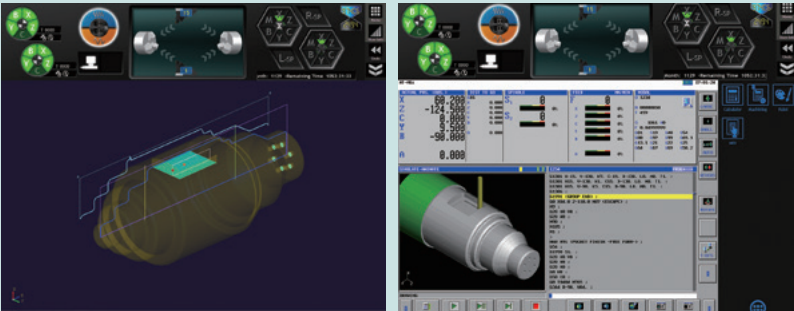
Feedback



Standard for NT Smart X

3D Smart Pro AI AI analysis NC programming support function

From the 3D CAD drawing, AI automatically analyzes “model geometry”, “machining path”, “machining tools”, “machining conditions”, and “machining process sequence”, to create NC programs for all processes from raw material to finished product.



3 useful features available with 3D Smart Pro AI

2. Optimization of machining processes

In addition to defining the required machining processes, AI proposes a suitable machining process sequence.



1. Transfer setting

Once the transfer position is set, the machining area and transfer program are created.



3. Tolerance setting

Once the tolerance value is input, the target value for machining can be set.



NT WORK NAVIGATOR

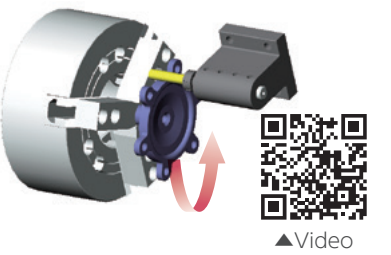


No fixtures required

Machining parts with non-round shapes, such as forgings or castings require that the raw part coordinates be recognized by the CNC control.

It works just by touching the part with a simple inexpensive probe (mostly a round bar mounted on a tool holder) and using the torque control feature of the servo-motor, which is to record required coordinates in the CNC.

The NT WORK NAVIGATOR is eliminating the need for positioning fixtures and special clamping devices.



Double safety features for maximum protection

NT Machine Simulation / NT Collision Guard + Airbag (Overload detection)

The machine comes protected with dual safety features: "NT Machine Simulation / NT Collision Guard" to prevent a collision beforehand, and the "Airbag Function" minimizes damage to the machine in case of collision.

NT Machine Simulation

Machine collisions are avoidable with Preventive safety technology!

By checking in advance for interference between chucks and tools, or between tools and covers, etc, in addition to checking the machining processes, the risk of a machine collision is drastically reduced, and the machining processes can be optimized.



Simulation is performed while checking the remaining movement amount and modal information.

It is possible to override the settings for rapid and cutting feed individually. Additionally, simulation by process or by single block is possible.

By process
Single feed

Image shown here is of a 2-turret machine

NT Collision Guard

Available in automatic or manual mode. Using the built-in 3D models on the machine, chucks, tools, holders, and parts, machine collisions can be monitored and prevented in real-time during automatic, manual, or jog movements. Even turret indexing is monitored to prevent collisions, drastically reducing collision risks, especially during machine setup.



Image shown here is of a Tool spindle machine

Airbag (Overload detection)

Compared to other machines, Nakamura-Tome machines will not break after the slightest collision. The "Airbag Function" minimizes the damage that may occur during a collision.

If a machine collision occurs, there is good reason to be confident: Airbag !

When the machine collides, there is no reason to panic.

The Airbag (Overload detection) of the machine tool significantly reduces the impact of a collision and protects the machine.

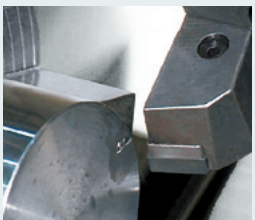


Without Airbag

Machines will not stop immediately. The slide continues to move even after a collision.



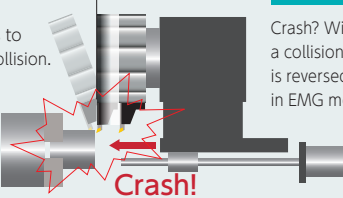
▲Video



With Airbag

Retraction within 0.001 sec

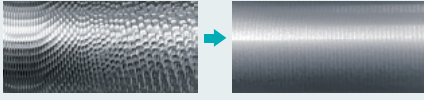
Crash? Within one millisecond after a collision, the servo motor direction is reversed, and the machine stops in EMG mode.



* This feature does not mean zero impact

Chatter Celler

Reduce the chatter and vibration by changing the spindle speed up/down continuously during cutting. This function can be turned ON/OFF simply by M code.



* It does not guarantee that the function works without chatter and vibration.
* Chatter and vibration reduction depend on the setup and the cutting condition.

Oscillation cutting (op.)

By oscillating the tool for a certain period, the chips are cut into small pieces. It can be activated easily by using a simple Fanuc G-code and resolve workpiece damage issues caused by chips twined around the part.

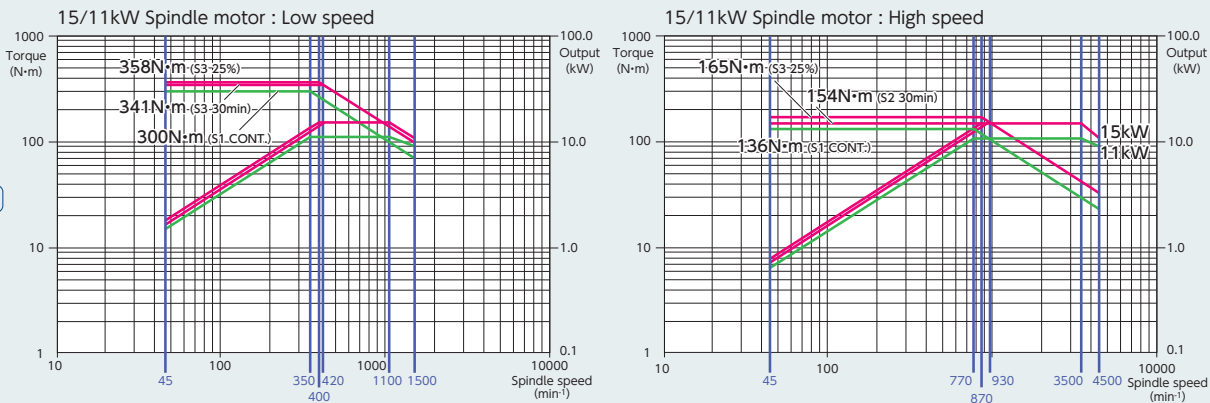


Material : Aluminum
Cutting speed : 200mm/min
Cutting feed : 0.1mm/rev
Cutting depth : 1.0mm

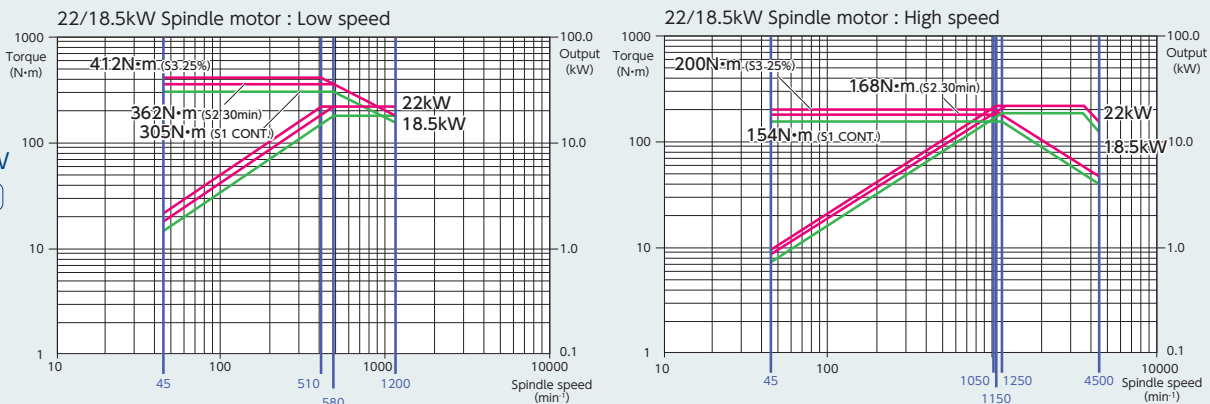
Torque/Output Chart

L/R-Spindle motor

15/11kW
Standard

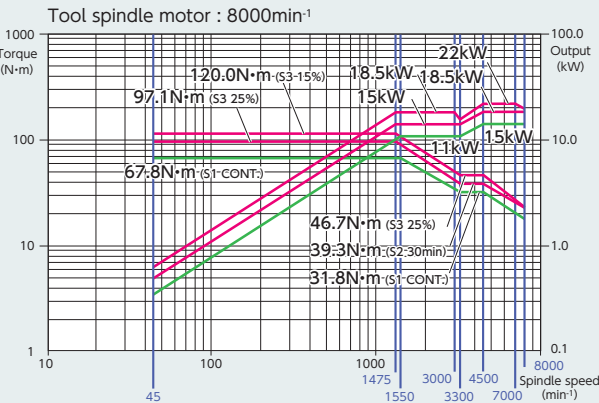


22/18.5kW
Option



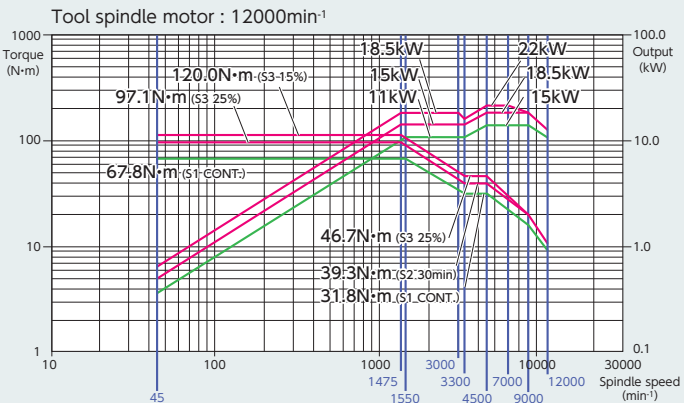
Tool spindle motor

Standard



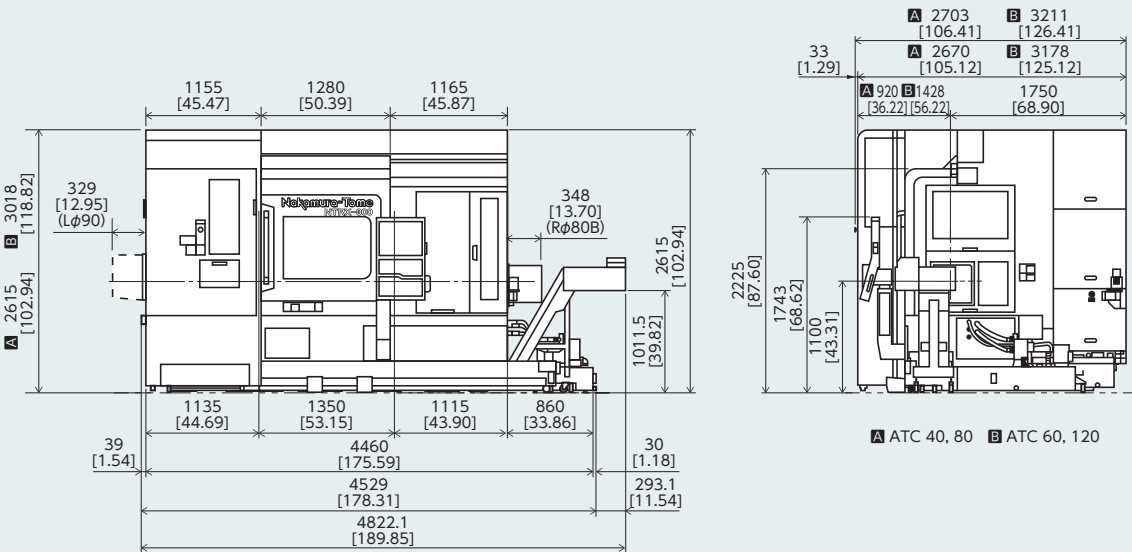
Tool spindle motor

Option



Machine Dimensions

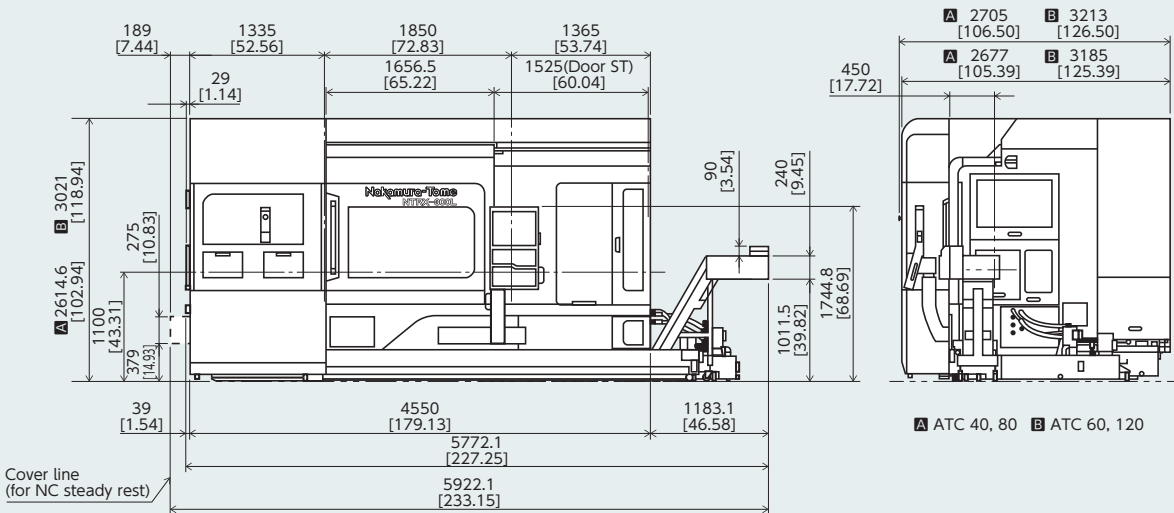
NTRX-300



*The dimensions given here may change depending on machine specifications.

mm[inch]

NTRX-300L

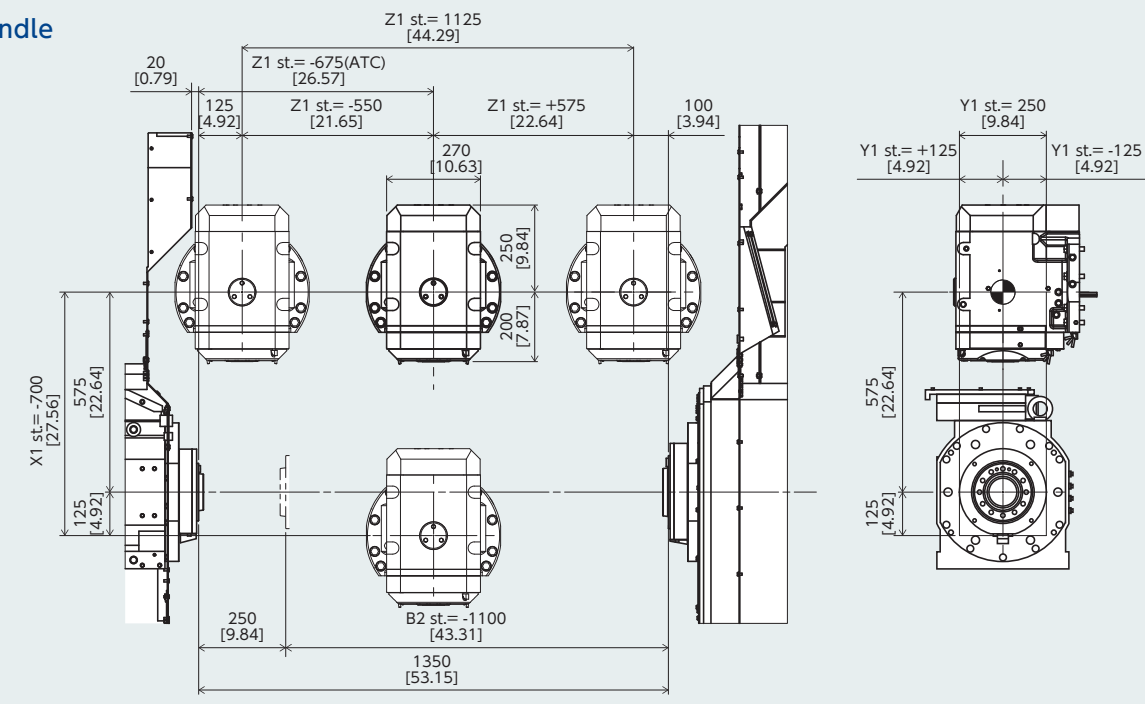


*The dimensions given here may change depending on machine specifications.

mm[inch]

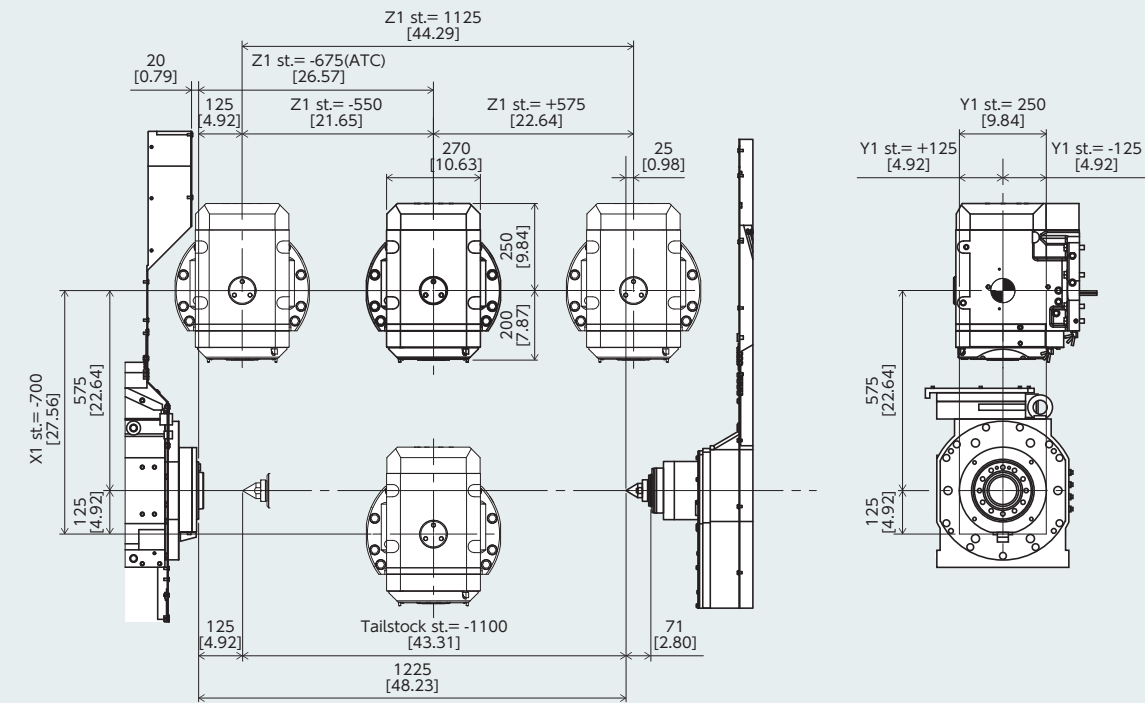
NTRX-300

R-spindle



mm[inch]

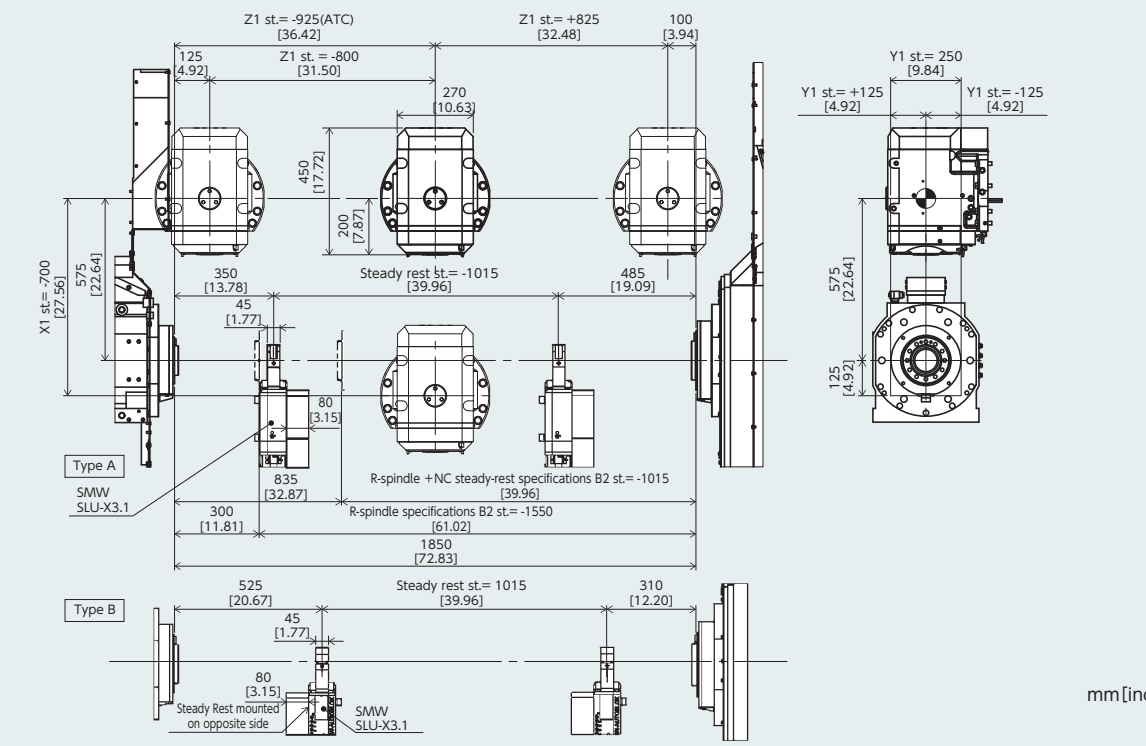
Tailstock



mm[inch]

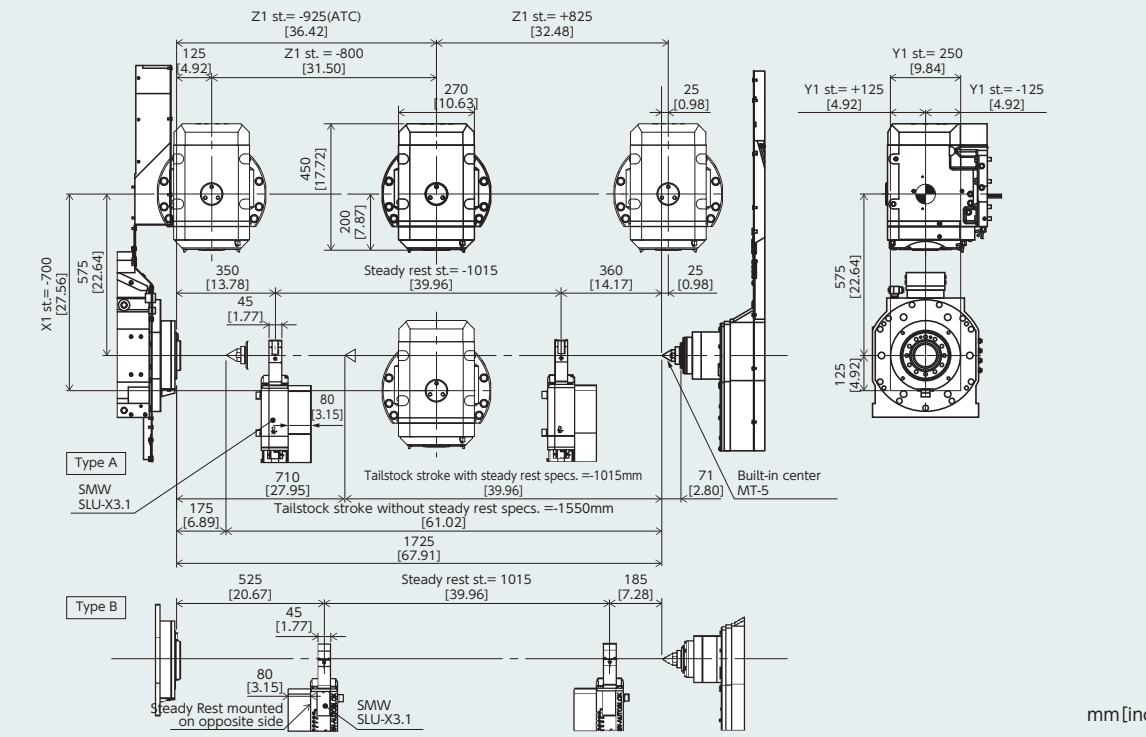
NTRX-300L

R-spindle



mm[inch]

Tailstock



mm[inch]

Tooling System

Sandvik Coromant Capto C6

φ50-100 Milling cutter



Face milling adapter
C6-391.05C-22 025M (0.9kg)
C6-391.05C-27 025M (1.0kg)
C6-391.05C-32 025M (1.1kg)

φ50-100 Side cutter



Side cutter arbor
C6-391.10-27 030 (1.1kg)
C6-391.10-32 025 (1.1kg)

End mill



Chamfering cutter



Drill



Drill with oil hole



Reamer



Tap



Tap (with coolant hole)



End mill



CORO MILL 390



Delta Drill



Coromant U drill



Straight collet



393.CG-20xx52 (φ3-16 Without shields)
393.CG-25xx56 (φ3-20 Without shields)
393.CG-32xx60 (φ6-25 Without shields)
393.CG5-20xx52 (φ3-18 With shields)
393.CG5-25xx56 (φ3-20 With shields)
393.CG5-32xx60 (φ8-25 With shields)

Straight collet



★AS 16-d (φ6-12)
★AS 20-d (φ6-16)
★ASS 20-d (φ6-16 Including adjust bolts)

ER/AR collet



393.14-16/20/25/32d (φ1-20)
393.15-16/20/25/32d (φ3-20 With shields)
※Commercially available ER/AR collets can be used instead.

Tap collet



393.14-20 Dxxxxxxx (M3-M14)
393.14-25 Dxxxxxxx (M5-M20)
393.14-20 Dxxxxxxx (M20-M22)
※Commercially available ER/AR collets can be used instead.

Tap adapter
(CoroChuck® 970)
970-C6-20-105 (1.2kg)
970-C6-25-124 (1.6kg)
970-C6-40-154 (2.8kg)

Weldon shank adapter
C6-391.20-20 065 (1.5kg)
C6-391.20-25 080 (1.9kg)
C6-391.20-32 090 (2.4kg)

ISO9766 shank adapter
C6-391.27-16 070 (1.1kg)
C6-391.27-20 070 (1.1kg)
C6-391.27-25 070A (1.1kg)
C6-391.27-32 070 (1.3kg)
C6-391.27-40 085 (1.7kg)

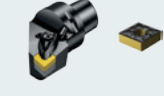
Extension adapter
C6-391.01-63 100A (2.3kg)
C6-391.01-63 140A (3.3kg)
C6-391.01-63 185 (3.8kg)
C6-391.01-62 060
(1.3kg short type / Bolt type not possible.)

Reduction adapter
C6-391.02-32 070A (1.1kg) (C6⇒C3)
C6-391.02-32 185 (2.8kg) (C6⇒C3)
C6-391.02-40 080A (1.3kg) (C6⇒C4)
C6-391.02-40 185 (3.0kg) (C6⇒C4)
C6-391.02-50 080A (1.5kg) (C6⇒C5)
C6-391.02-50 110 (2.2kg) (C6⇒C5)

★Alps tool type AS-AC



Cutting head "CoroTurn" Prime" for OD Face turning
C6-CP-30AR/L-45065-11C (1.3kg)
C6-CP-25BR/L-45065-11B (1.3kg)



CORO TURN® RC
C6-DCLNR/L-45065-12/16/19 (1.3kg)
C6-PCLNR/L-45065-12HP/16HP/19HP (1.3kg)
C6-DDJNR/L-45065-1504 (1.1kg)
C6-PDJNR/L-45065-1504HP (1.2kg)
C6-SCLNR/L-45065-09/12 (1.1kg)
C6-SCLNR/L-45065-12HPA (1.2kg)
C6-SDJCR/L-45065-11 (1.1kg)
C6-SDJCR/L-45065-11HPA (1.2kg)



Cutting head for grooving / cut off turning
CORO CUT® 1-2
C6-R/LF123G10-45065B (3.0kg)
C6-R/LF123H13-45065B (4.0kg)
C6-R/LF123J13-45065B (4.0kg)
C6-R/LF123K16-45065B (5.2kg)
C6-R/LF123L16-45065B (5.5kg)



Cutting head for OD thread
C6-266R/LFG-45065-16/22/27 (1.3kg)



Cutting head for ID boring
C6-DCLNR/L-27240-12/-27140-16 (0.9/1.7kg)
C6-PCLNR/L-27240-12HP/-27140-12HP (1.0/1.7kg)
C6-DDUNR/L-27140-15 (1.7kg)
C6-DDUNR/L-27140-15HP (1.7kg)



Cutting head for ID thread
C6-266R/LKF-14070-16 (1.0kg)
C6-266R/LKF-17075-16 (1.0kg)
C6-266R/LKF-22090-16 (1.2kg)
C6-266R/LKF-27105-16 (1.6kg)



Head cartridge type boring bar (steel)
C6-570-2C 16 056 (0.9kg)
C6-570-2C 20 068 (1.0kg)
C6-570-2C 25 082 (1.0kg)
C6-570-2C 32 081 (1.2kg)
C6-570-2C 40 092 (1.5kg)
C6-570-2C 40 105 (2.4kg)



Head cartridge type boring bar (vibration absorption)
C6-570-3C 16 088 (1.0kg)
C6-570-3C 20 108 (1.0kg)
C6-570-3C 25 230 (1.7kg)
C6-570-3C 32 224 (2.1kg)
C6-570-3C 40 198 (2.6kg)
C6-570-3C 50 239 (4.2kg)



Adapter for cylindrical shank with flat
C6-131-00098-25 (2.4kg)
C6-131-00112-40 (3.5kg)



Rectangular shank adapter (type B)
A C6-ASHR/L-105-20HP (2.3kg)
C6-ASHR/L-122-25HP (2.9kg)
B C6-ASHA-070-20HP (1.8kg)



MDI adapter (*MDI = Modular Drilling Interface)
C6-DW20-N-033 (1.0kg)
C6-DW25-N-030 (1.0kg)
C6-DW32-N-030 (1.0kg)
C6-DW40-N-040 (1.4kg)



Extension adapter
C6-391.01-63 100A (2.3kg)
C6-391.01-63 140A (3.3kg)
C6-391.01-63 185 (3.8kg)
C6-391.01-62 060 (1.3kg short type / Bolt type not possible.)



Reduction adapter
C6-391.02-32 070A (1.1kg) (C6⇒C3)
C6-391.02-32 185 (2.8kg) (C6⇒C3)
C6-391.02-40 080A (1.3kg) (C6⇒C4)
C6-391.02-40 185 (3.0kg) (C6⇒C4)
C6-391.02-50 080A (1.5kg) (C6⇒C5)
C6-391.02-50 110 (2.2kg) (C6⇒C5)



Cutting head
R/L 570 type



Sleeve
132N-25xx (φ6.8,10,16,20)
132N-40xx (φ20,25,32)



Steel cutting tool for ID



Carbide cutting tool for ID
Exxx-STFCR/L xx-R



CoroDrill® DS20
DS20-DxxxxDMxxx-xx (φ15-40, MDI size, L/D 04 OR 07)

* For details, refer to the Sandvik Coromant Tooling Catalog.

NTRX-300

Capacity		φ65	φ71 (op.)	φ80A*1 (op.)	φ80B*2 (op.)	φ90 (op.)
Max. turning diameter		640mm				
Distance between spindles		max.1,350mm / min.250mm				
Distance between centers		max.1,225mm / min.125mm				
Max. turning length		1,100mm				
Bar capacity	L	φ65mm	φ71mm	φ80mm*1	φ80mm*2	φ90mm
	R					φ80mm*2
Chuck size		8" / 10"				

Axis travel

X1-Axis slide travel	700mm
Z1-Axis slide travel	1,125mm
Y1-Axis slide travel	±125mm
B2-Axis slide travel	1,100mm

Rapid feed

X1-Axis rapid feed rate	36m/min
Z1-Axis rapid feed rate	36m/min
Y1-Axis rapid feed rate	36m/min
B2-Axis rapid feed rate	27m/min

L-spindle

Spindle speed	4,500min ⁻¹	3,500min ⁻¹	3,500min ⁻¹	2,500min ⁻¹	2,500min ⁻¹
Spindle motor	15/11kW, 22/18.5kW(op.)		22/18.5kW(op.)		
Spindle speed range	Stepless	Stepless	Stepless	Stepless	Stepless
Spindle nose	A2-6	A2-8	A2-8	A2-8	A2-8
Hole through spindle	80mm	90mm	90mm	100mm	107mm
I.D. of front bearing	120mm	130mm	130mm	150mm	150mm
Hole through draw tube	66mm	72mm	81mm	81mm	91mm

R-spindle

Spindle speed	4,500min ⁻¹	3,500min ⁻¹	3,500min ⁻¹	2,500min ⁻¹	-
Spindle motor	15/11kW, 22/18.5kW(op.)		22/18.5kW(op.)		-
Spindle speed range	Stepless	Stepless	Stepless	Stepless	-
Spindle nose	A2-6	A2-8	A2-8	A2-8	-
Hole through spindle	80mm	90mm	90mm	100mm	-
I.D. of front bearing	120mm	130mm	130mm	150mm	-
Hole through draw tube	66mm	72mm	81mm	81mm	-

*1 Direct connecting pipe

*2 Joint connection

ATC Tool spindle

Tool spindle speed	8,000min ⁻¹ / 12,000min ⁻¹ (op.)
Tool spindle motor	22/15kW
Swiveling range	225° (-120° , +105°)
Tool coupling type	CAPTO C6 / HSK-A63(op.)
Number of tools	40, (op. 60, 80, 120)
Max. tool diameter / Without adjacent tool	90mm / 130mm
Max. tool length	300mm

Tailstock(op.)

Driving system	NC control servo-driven type
Stroke	1,100mm
Quill taper	MT-5(Built-in center)
Range of thrust force	2.5~6.5kN

C-axis

Least input increment	0.001°
Least command increment	0.001°
Rapid speed	400min ⁻¹
Cutting feed rate	1~4,800° /min
C-axis clamp	Disk clamp
C-axis connecting time	1.5s

General

Height	2,615mm
Floor space (L × W)	4,529mm ×2,670mm
Machine weight (incl. control)	17,000kg (ATC 40)
	18,000kg (ATC 60, 80)
	19,000kg (ATC 120)

Power supply

Power supply	38.6kVA(42.3kVA) (L-spindle 15/11kW,NC tailstock)
	45.1kVA(48.8kVA) (L-spindle 22/18.5kW,NC tailstock)
	48.2kVA(51.9kVA) (L/R-spindle 15/11kW)
	61.4kVA(65.1kVA) (L/R-spindle 22/18.5kW)

Safety quality specifications

Various interlocks, such safety fences, auto extinguisher devices, and other safety related equipment may be required. These have to be selected during the configuration of the machine.

① Safety devices include electromagnetic door lock, chuck interlock, hydraulic pressure switch, air pressure switch, short circuit breaker and quill interlock.

(Door interlock and chuck interlock are standard equipment.)

② In case of automation, various safety fences may be required, such as work stocker safety fences, robot safety fences, ...etc.

During the configuration of machine specifications, please discuss these requirements with the Nakamura-Tome machine sales representative.

Precautions on the use of cutting fluids and lubricating oils

- Some types of cutting fluids (coolant) are harmful to machine components, causing damages such as peeling of paint, cracking of resin, expanding of rubber, corrosion and rust build up on aluminum and copper. To avoid causing damage to the machine, never use synthetic coolants, or any coolants containing chlorine. In addition, never use coolants and lubricating oils which contain organic solvents such as butane, pentane, hexane and octane

Items

Control Type	FANUC 31i-B5 (1-PATH)
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Controlled axes

Controlled axes	6 axes
Simultaneously Controlled axes	5 axes (X1, Z1, C1, Y1, B1, B2 axis)

Input command

Least input increment	X,Z,Y,B2:0.001mm/0.0001inch (diameter for X-axis), C,B1:0.001°
Least command increment	X:0.0005mm / Z,Y,B2:0.001mm / C,B1:0.001°
Max. programmable dimension	±999999.999mm / ±39370.0787in , ±999999.999°
Absolute/ Incremental programming	X, Z, Y, C, B(absolute only for B) / U, W, V, H
Decimal input	Standard
Inch / Metric conversion	G20 / G21
Programmable data input	G10

Feed function

Cutting feed	feed/min X1, Z1: 1~8000mm/min, 0.01~314inch/min (1~4800mm/min, 0.01~188inch/min) Y1: 1~8000mm/min, 0.01~314inch/min (1~4800mm/min, 0.01~188inch/min) C1: 1~4800°/min B1: 1~8000° /min (1~4800° /min) B2: 1~4800mm/min, 0.01~188inch/min
	feed / rev X1, Z1: 0.0001~8000.0000mm/rev (0.0001~4800.0000mm/rev) Y1: 0.0001~8000.0000mm/rev (0.0001~4800.0000mm/rev) B2: 0.0001~4800.0000mm/rev 0.000001~50.000000inch/rev
	The maximum cutting feed rate is the value in AI contour control mode. In normal operation, It is enabled with G316 command. The values in parentheses are normal values.
Dwell	G04
Feed per minute / Feed per revolution	G98 / G99
Thread cutting	G32F designation
Thread cutting retract	Standard
Continuous thread cutting	Standard
Handle feed	Manual pulse generator 0.001/0.01/0.1mm,° (per pulse)
Automatic acceleration / decelaration	Standard
Linear accel./ decel. after cutting feed interpolation	Standard
Rapid feed override	Low/25/50/100% (can be set from 0~100 in 10% intervals on NT Setting screen)
Cutting feedrate override	0~150%, 10%(each 10%)
AI contouring control I	G5.1
L- Spindle override	50%~120% Set every 10%
Tool Spindle override	50%~120% Set every 10%

Program memory

Part program storage length/ Number of registerable programs	512Kbyte Total 1280m	1000
	1Mbyte Total 2560m(op.)	1000
		2000
	2Mbyte Total 5120m(op.)	1000
		4000
	4Mbyte Total 10240m(op.)	1000
		4000
	8Mbyte Total 20480m(op.)	1000
		4000
Parts program editing	delete, insert, change	
Program number search	Standard	
Sequence number search	Standard	
Address search	Standard	
Program storage memory	Battery backup	
Background editing	Standard	
DNC operation through memory card	Standard (Not including memory card)	
Extended part program editing	Standard	

Operation and display

HMI (Human Machine Interface)	NT SmartX
Operation panel : Display	19-inch color SXGA LCD touch panel
Operation panel : Keyboard	QWERTY keyboard

Programming assist functions

Circular interpolation R programming	Standard
Direct drawing dimension programming (Direct drawing dimension programming is standard)	Standard
Canned cycles	G90, G92, G94
Multiple repetitive canned cycles	G70 ~ G76
Multiple repetitive canned cycles II	G71, G72
Canned cycles for drilling	G80 ~ G89
Sub program	Standard
Custom macro	Standard (common variables #100 - #149, #500 - #549)
Additional customer macro variables (After addition, #100 - #199, #500 - #999)	Standard
Luck-bei II / NT Manual Guide i	Standard
Abnormal load detection function	Standard
NT WORK NAVIGATOR	Standard(not including contact bar)
NT NURSE	Standard

Machine support functions

Rigid tapping	Standard
Spindle synchronised control	Standard
C axis synchronised control	Standard(G496 C1. rapid feed positioning)
Spindle orientation	Standard
Tool spindle orientation	Standard : 4 positions (4×90°)(M785/M786/M787/M788)
	Maximum : 12 positions(12×30°)(G419)

ECO functions

Servo motor power off	Standard(Switch on Power Saving Mode in NT Setting screen)
Control of motor output during acceleration and deceleration	Standard(Switch on Power Saving Mode in NT Setting screen)
G code for servo motor energy-saving during acceleration and deceleration	G356/G357
Automatic light off	Standard(Switch on Power Saving Mode in NT Setting screen)
Automatic monitor off	Standard(Switch on Power Saving Mode in NT Setting screen)

NTRX-300L

Capacity	φ65	φ71 (op.)	φ80A*1 (op.)	φ80B*2 (op.)	φ90 (op.)
Max. turning diameter	640mm				
Distance between spindles	max.1,850mm / min.300mm *3				
Distance between centers	max.1,725mm / min.175mm *4				
Max. turning length	1,600mm				
Bar capacity	L	φ65mm	φ71mm	φ80mm*1	φ90mm
	R			φ80mm*2	φ80mm*2
Chuck size	8" / 10"				

Axis travel

X1-Axis slide travel	700mm
Z1-Axis slide travel	1,625mm
Y1-Axis slide travel	±125mm
B2-Axis slide travel	1,550mm (1,015mm / Steady rest)

Rapid feed

X1-Axis rapid feed rate	36m/min
Z1-Axis rapid feed rate	36m/min
Y1-Axis rapid feed rate	36m/min
B2-Axis rapid feed rate	27m/min

L-spindle

Spindle speed	4,500min ⁻¹	3,500min ⁻¹	3,500min ⁻¹	2,500min ⁻¹	2,500min ⁻¹
Spindle motor	15/11kW, 22/18.5kW(op.)		22/18.5kW(op.)		
Spindle speed range	Stepless	Stepless	Stepless	Stepless	Stepless
Spindle nose	A2-6	A2-8	A2-8	A2-8	A2-8
Hole through spindle	80mm	90mm	90mm	100mm	107mm
I.D. of front bearing	120mm	130mm	130mm	150mm	150mm
Hole through draw tube	66mm	72mm	81mm	81mm	91mm

R-spindle

Spindle speed	4,500min ⁻¹	3,500min ⁻¹	3,500min ⁻¹	2,500min ⁻¹	-
Spindle motor	15/11kW, 22/18.5kW(op.)		22/18.5kW(op.)		
Spindle speed range	Stepless	Stepless	Stepless	Stepless	-
Spindle nose	A2-6	A2-8	A2-8	A2-8	-
Hole through spindle	80mm	90mm	90mm	100mm	-
I.D. of front bearing	120mm	130mm	130mm	150mm	-
Hole through draw tube	66mm	72mm	81mm	81mm	-

*1 Direct connecting pipe
*2 Joint connection
*3 R-spindle + Steady rest specification:max.1,850mm / min.835mm
*4 Tailstock + Steady rest specification:max.1,725mm / min.710mm
*5 Not available when Unloading Hand Gripper(op.) is selected

ATC Tool spindle

Tool spindle speed	8,000min ⁻¹ / 12,000min ⁻¹ (op.)
Tool spindle motor	22/15kW
Swiveling range	240° (±120°)
Tool coupling type	CAPTO C6 / HSK-A63(op.)
Number of tools	40, (op. 60, 80, 120)
Max. tool diameter / Without adjacent tool	90mm / 130mm
Max. tool length	300mm
Long-tool ATC storage capacity / Length	3 / φ65mm × L450mm *5

Tailstock(op.)

Driving system	NC control servo-driven type
Stroke	1,550mm
Quill taper	MT-5(Built-in center)
Range of thrust force	2.5~6.5kN

C-axis

Least input increment	0.001°
Least command increment	0.001°
Rapid speed	400min ⁻¹
Cutting feed rate	1~4,800° /min
C-axis clamp	Disk clamp
C-axis connecting time	1.5s

General

Height	2,615mm
Floor space (L × W)	5,440mm ×2,670mm
Machine weight (incl. control)	19,000kg (ATC 40)
	20,000kg (ATC 60, 80)
	21,000kg (ATC 120)

Power supply

Power supply	39.2kVA(42.8kVA) (L-spindle 15/11kW,NC tailstock)
	45.8kVA(49.5kVA) (L-spindle 22/18.5kW,NC tailstock)
	48.8kVA(52.5kVA) (L/R-spindle 15/11kW)
	62.0kVA(65.6kVA) (L/R-spindle 22/18.5kW)

Safety quality specifications

Various interlocks, such safety fences, auto extinguisher devices, and other safety related equipment may be required. These have to be selected during the configuration of the machine.

① Safety devices include electromagnetic door lock, chuck interlock, hydraulic pressure switch, air pressure switch, short circuit breaker and quill interlock. (Door interlock and chuck interlock are standard equipment.)

② In case of automation, various safety fences may be required, such as work stocker safety fences, robot safety fences, ...etc.

During the configuration of machine specifications, please discuss these requirements with the Nakamura-Tome machine sales representative.

Precautions on the use of cutting fluids and lubricating oils

- Some types of cutting fluids (coolant) are harmful to machine components, causing damages such as peeling of paint, cracking of resin, expanding of rubber, corrosion and rust build up on aluminum and copper. To avoid causing damage to the machine, never use synthetic coolants, or any coolants containing chlorine. In addition, never use coolants and lubricating oils which contain organic solvents such as butane, pentane, hexane and octane

Items

Control Type	FANUC 31i-B5 (1-PATH)
Controlled axes	6 axes
Simultaneously Controlled axes	5 axes (X1, Z1, C1, Y1, B1, B2 axis)

Input command

Least input increment	X,Z,Y,B2:0.001mm/0.0001inch (diameter for X-axis), C,B1:0.001°
Least command increment	X:0.0005mm / Z,Y,B2:0.001mm / C,B1:0.001°
Max. programmable dimension	±999999.999mm / ±39370.0787in , ±999999.999°
Absolute/ Incremental programming	X, Z, Y, C, B(absolute only for B) / U, W, V, H
Decimal input	Standard
Inch / Metric conversion	G20 / G21
Programmable data input	G10

Feed function

Cutting feed	feed/min X1, Z1: 1 ~ 8000mm/min, 0.01 ~ 314inch/min (1 ~ 4800mm/min, 0.01 ~ 188inch/min) Y1: 1 ~ 8000mm/min, 0.01 ~ 314inch/min (1 ~ 4800mm/min, 0.01 ~ 188inch/min) C1: 1 ~ 4800°/min B1: 1 ~ 8000° /min (1 ~ 4800° /min) B2: 1 ~ 4800mm/min, 0.01 ~ 188inch/min
	feed / rev X1, Z1: 0.0001 ~ 8000.0000mm/rev (0.0001 ~ 4800.0000mm/rev) Y1: 0.0001 ~ 8000.0000mm/rev (0.0001 ~ 4800.0000mm/rev) B2: 0.0001 ~ 4800.0000mm/rev 0.000001 ~ 50.000000inch/rev The maximum cutting feed rate is the value in AI contour control mode. In normal operation, It is enabled with G316 command. The values in parentheses are normal values.
	Dwell G04
	Feed per minute / Feed per revolution G98 / G99
	Thread cutting G32F designation
Thread cutting retract	Standard
Continuous thread cutting	Standard
Handle feed	Manual pulse generator 0.001/0.01/0.1mm,* (per pulse)
Automatic acceleration / decelaration	Standard
Linear accel./ decel. after cutting feed interpolation	
Rapid feed override	Low/25/50/100% (can be set from 0~100 in 10% intervals on NT Setting screen)
Cutting feedrate override	0 ~ 150%, 10%(each 10%)
AI contouring control I	G5.1
L- Spindle override	50%~ 120% Set every 10%
Tool Spindle override	50%~ 120% Set every 10%

Program memory

Part program storage length/ Number of registerable programs	512Kbyte Total 1280m	1000
	1Mbyte Total 2560m(op.)	1000 2000
	2Mbyte Total 5120m(op.)	1000 4000
	4Mbyte Total 10240m(op.)	1000 4000
	8Mbyte Total 20480m(op.)	1000 4000
Parts program editing	delete, insert, change	
Program number search	Standard	
Sequence number search	Standard	
Address search	Standard	
Program storage memory	Battery backup	
Background editing	Standard	
DNC operation through memory card	Standard (Not including memory card)	
Extended part program editing	Standard	

Operation and display

HMI (Human Machine Interface)	NT SmartX
Operation panel : Display	19-inch color SXGA LCD touch panel
Operation panel : Keyboard	QWERTY keyboard

Programming assist functions

Circular interpolation R programming	Standard
Direct drawing dimension programming or Chamfering/Corner R	Standard (Direct drawing dimension programming is standard)
Canned cycles	G90, G92, G94
Multiple repetitive canned cycles	G70 ~ G76
Multiple repetitive canned cycles II	G71, G72
Canned cycles for drilling	G80 ~ G89
Sub program	Standard
Custom macro	Standard (common variables #100 - #149, #500 - #549)
Additional customer macro variables	Standard (After addition, #100 - #199, #500 - #999)
Luck-bei II / NT Manual Guide i	Standard
Abnormal load detection function	Standard
NT WORK NAVIGATOR	Standard(not including contact bar)
NT NURSE	Standard

Machine support functions

Rigid tapping	Standard
Spindle synchronised control	Standard
C axis synchronised control	Standard(G496 C1. rapid feed positioning)
Spindle orientation	Standard
Tool spindle orientation	Standard : 4 positions (4×90°)(M785/M786/M787/M788)
	Maximum : 12 positions(12×30°)(G419)

ECO functions

Servo motor power off	Standard(Switch on Power Saving Mode in NT Setting screen)
Control of motor output during acceleration and deceleration	Standard(Switch on Power Saving Mode in NT Setting screen)
G code for servo motor energy-saving during acceleration and deceleration	G356/G357
Automatic light off	Standard(Switch on Power Saving Mode in NT Setting screen)
Automatic monitor off	Standard(Switch on Power Saving Mode in NT Setting screen)



Netsuno 15, Hakusan city, Ishikawa, 920-2195 Japan
Phone : +81 76 273 8100 Fax : +81 76 273 4312
E-mail : nt-jpn@nakamura-tome.co.jp

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